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XXVII. *Two Letters concerning Toxicodendron.*

LETTER I.

From the Abbé Mazeas, F. R. S. to the Rev. Stephen Hales, D. D. F. R. S. Translated from the French, by James Parsons, M.D. and F. R. S.

SIR,

Paris, Aug. 16, 1754.

Read Dec. 19, 1754. IT is not long since (while I was making some experiments upon the painted cloths made in Europe, in order, if possible, to bring them to greater perfection) I received a letter upon the same subject from the Abbé Sauvages, of the Royal Society of Montpellier. In this letter he communicated a discovery of a plant, the juice of which adheres, without the least acrimony, to a cloth, with more force than any other known preparation. The colour is black, and the plant, which produces it, is the *Toxicodendron Carolinianum foliis pinnatis, floribus minimis herbaceis*.

I was then upon the point of going to St. Germain, where the Duke D'Ayen has a botanical garden, which is the most complete in the kingdom. My first care was to confirm the Abbé Sauvages's discovery; they shewed me the plant mentioned, which, they said, was a native tree of Carolina, but which was

was not yet more than two feet high. This tree is remarkable for its leaves, which are continued like wings the whole length of the twigs. I pulled off one of the leaves, the juice of which produced a brownish colour upon my ruffle, but did not change black in less than two or three hours.

I had a mind to examine all the plants of the same class. Near this was the *Toxicodendron triphyllum* *folio sinuato pubescente*. T. 611. *Hederæ trifoliæ Canadensis affinis planta peregrina, arbor venenata quorundam*. H. R. Par. 84. *Arbor trifolia venenata Virginiana folio hirsuto*. Raii. hist. 1799. This plant, which was no less a tree than the foregoing, is not as yet above three feet high ; its leaves are hairy ; their pedicles, ribs, and fibres, are red ; a leaf being pulled off, a milky juice issued from the pedicle, which being put upon linen, became a finer black than the former, in less than half an hour.

In this botanical garden I saw another species of *Toxicodendron* : this, however, was but a shrub, which appeared to me to be at its full growth. It is the *Toxicodendron triphyllum glabrum*. T. 611. *Hedera trifolia Canadensis* Corn. 96. *vitis sylvestris trifolia*. Park. Theat. 1556. This plant is remarkable for having an infinite number of black points scattered upon the surface of its leaves, which seem'd to me to be a juice extravasated through the punctures of insects. A leaf being pulled off, a milky juice flowed out, which, the instant it was exposed to the sun, became the finest and deepest black I had ever seen.

I doubt

I doubt not, but that if these two trees of Carolina were of their proper height, they would produce as fine a colour as this last shrub. However, I put the linen marked with the three black spots into a boil of soap, and it came out without the least diminution of the colour of the spots. When this linen was dried, I threw it into a strong lye of the ashes of green wood ; and it, in like manner, came out without the least alteration of the three shades of the spots, produced by the three plants mentioned.

I took a handful of the leaves of the *Toxicodendron glabrum*, to try if it might be of use in dying ; and made a very strong decoction of it ; and while it was boiling I dipped linen in it : it was tinged green, but, besides its not being a good green, the whole surface was unequally coloured ; for I observed several places took a fine black : whence I concluded, that the resinous juice of the internal parts of the plant was the only part capable of producing the desired effect. I was confirmed in this notion, after having let my decoction settle ; it first let fall a black resinous juice in small quantity, like the opium of our shops : then a large quantity of a white sediment like a salt, which was quite tasteless upon the tongue. In short, the water appeared greenish above, and blackish towards the bottom of the vessel.

I should have been glad to try some experiments upon the Roots of this plant ; but, as there was only one in the garden, I was afraid of injuring it. Perhaps the fruit or seeds might produce some kind of dye,

dye. I do not doubt but that, in making incisions in the bark, one might even obtain a juice which might be turned to some use: for the blacks of our painted cloths, which are preparations of iron with nut-galls, after a certain number of washings, are quite spoiled, and only leave a rusty colour behind. But it is not so with the *Toxicodendron foliis pinnatis*, since the Abbé Sauvages assures me, in his letter, that it is five years since his linen, marked with the juice of this plant, has retained the black spots, notwithstanding the great number of washings in lye it has gone through.

I beg, Sir, you will present my respects to all my good friends, and be assured of the sincere and inviolable attachment, with which I shall, during life, remain,

Your most humble

and obedient servant,

W. Mazeas.

L E T T E R

LETTER. II.

From Mr. Philip Miller, F. R. S. to the
Reverend Thomas Birch, D. D. Secret.
R. S.

SIR,

Read May 8, 1755. IN the Abbé Mazeas's letter, which was
read before the Royal Society, on the 19th of December last, he mentions, that while he
was making some experiments upon the painted cloths made in Europe, in order, if possible, to bring
them to greater perfection, he received a letter upon
the same subject from the Abbé de Sauvages, of the
Royal Society of Montpellier, in which is communi-
cated a discovery of a plant, the juice of which ad-
heres, without the least acrimony, to a cloth, with
more force than any other known preparation. The
colour is black, and the plant, which produces it, is
the *Toxicodendron Carolinianum foliis pinnatis, flori-
bus minimis herbaceis*.

The Abbé Mazeas afterwards mentions some trials,
which he made with the juice of this plant, as also
those of two other species of toxicodendron, which
were growing in the garden of Duke D'Ayen at St.
Germain: by which he observed, that the juice of
the other two species stained his ruffles of a finer
black, and in much less time than that of the first-
mentioned; which he supposes may have been occa-
sioned by the quantity of the juice, which flowed
from the two last, as the plants were much stronger,

and he was less cautious of wounding them ; for he says, the *Carolina Toxicodendron* was so small, that he could only take off a single leaf ; otherwise he believes the stains would have been equal.

As the use of this dye is at present but little known in Europe, this may appear as a new discovery ; but whoever will give themselves the trouble to turn to the books, in which this plant is described, will find, that this *American Toxicodendron* is the same species of plant, from which the inhabitants of Japan procure the varnish, with which they stain all their utensils ; and the Calicuts are also painted with the juice of this shrub.

That this communication of the Abbé Mazeas may not appear in the Transactions of the Royal Society as a new discovery, I shall beg leave to mention a brief account of what has been written upon this subject.!

Doctor Kämpfer, in his *Fasciculus Amœnitatum exoticarum*, has given a figure and description of this plant, which are so accurate, as to leave no doubt of its being the same plant as the *Carolina Toxicodendron*. His book was printed at Lemgow, in 1712. His title of the plant is *Arbor vernacifera legitima, folio pinnato juglandis, fructu racemoſo ciceris facie.* And by the inhabitants of Japan it is called *Sitz vel Sitz dſju*, as also *Urus seu Urus no ki*. In the same book there is a figure and description of the wild varnish-tree, which he calls, *Arbor vernacifera spuria sylvestris angustifolia* ; and the inhabitants, *Faſi no ki* ; but the varnish, which comes from this tree, is of little esteem.

Here

Here I must beg leave to mention, that the seeds, which were sent to the Royal Society some years ago, for those of the true varnish-tree, by the Jesuits at China, prove to be of this wild sort; and the account, which those reverend fathers sent of the manner, in which the varnish is procured, being so very different from that, which is mentioned by Doctor Kämpfer, I shall here transcribe it.

He says, they first slit the bark of the branches of the shrub, in different places, with a knife: from these wounds there flows out a white clammy juice, which soon turns black when exposed to the air: the same juice, he says, is contained in the leaves and stalks of the plant. This juice has no other tasteable quality but that of heating without turning sour, but it is dangerous to handle, being of a poisonous nature. When they make these incisions in the branches of the trees, they place wooden vessels under them, to receive the juice as it drops from the wounds; and when these become dry, and will afford no more juice, they make fresh wounds in the stems of the shrubs, near their roots, so that all the juice is drawn out of them: then they cut down the shrubs to the ground, and from their roots new stems arise, which in three years will be fit to tap again.

This native varnish, he says, scarcely wants any preparation; but if any dirt should happen to mix with it, the Japoneſe strain it through a coarse gauſe, to cleanse it; then put it into wooden vessels, covering it with a little of the oil called *Toi*, and ſtreſhing a ſkin over it to prevent its evaporating. Then, being thus put up, it is carried all over China and Japan

pan for sale. The varnish, he says, expires a poisonous vapour, which occasions great pains in the head, and causes the lips of those who handle it to swell: upon which account the artificers, when they use it, are obliged to tie a handkerchief over their nose and mouth, to prevent these effects.

The shrub is chiefly cultivated in the provinces of Tsi, Kocko, and Figo: and the best varnish in the world, he says, is produced about the city Jaffino: but there are many other sorts of varnish, which are collected in Siam, Corsama, and other provinces, which are much inferior in their quality to this, and are produced by different plants: but one of the best among those, he says, is produced from the *Anacardium*, or *Cashew-nut-tree*. This is procured by perforating the bodies of the trees, and placing an hollow tube into the hole, under which is put a wooden vessel, to receive the liquor, as it flows through the tube; and when they have obtained as much of the juice as will flow out, they stop the holes made in the trees. This juice is white when it proceeds from the wounds, but changes black when expos'd to the air.

This varnish is used, without any mixture, for staining black; but the Chinese mix native cinnabar, or a red kind of earth, with it, to make a different colour.

The plant, which the Abbé de Sauvages mentions, is also figured and described by Doctor Dillenius, in the *Hortus Elthamensis*, p. 390. by the Title of *Toxicodendron foliis alatis, fructu rhomboide*, where he also quotes the description from Doctor Kämpfer, with the account, which is above-mentioned; and he has

has added all the synonyms from the different authors, who have mentioned the plant, and makes no doubt of its being the same with that of Japan, which, he says, should not seem strange, that a varnish-tree should be found in America, near the same latitude with Japan ; since the Genseng, the Bignonia, commonly called Catalpa, with many other plants, are found to be natives of both these countries. And he questions, if the Tea-tree might not be discovered in America, if persons of skill were there to search for it. And he is surprised, that the inhabitants of the English colonies in America have not attempted to procure the varnish, whereby a considerable profit may arise to them, as the plant grows naturally in so great plenty there.

Mr. Catesby, in his *Natural History of Carolina*, vol. I. p. 40. has given a very good figure and description of this plant : he calls it *Toxicodendron foliis alatis, fructu purpureo pyriformi sparso*. And, he says, the inhabitants of Carolina and the Bahama islands call it, Poison-tree, and Poison-ash, as the other two sorts of Toxicodendron are called Poison-oak in Virginia and New England. Mr. Catesby takes notice, that from the trunk of these trees is distilled a liquid, black as ink, which the inhabitants say is poison ; but does not mention its being used there.

There are two accounts of the poisonous quality of this tree, which are printed in the *Philosophical Transactions of the Royal Society*, Numb. 367. The first was sent by the Honourable Paul Dudley, F. R. S. from New England, and the other was communicated

nnunicated by Doctor William Sherard, F. R. S. By both these accounts it is very plain, that this species of Toxicodendron grows naturally in Virginia and New England, in as great plenty as Carolina, where all the species are the most common under-wood, in the lands which have not been cleared.

I shall only beg leave to add, that as these shrubs are so very common in our northern colonies, and the Anacardium, or Cashew nut-tree, is also common in our southern colonies of America ; it were to be wished, that the inhabitants of both would make some experiments to collect this varnish, which may not only produce much profit to themselves, but also become a national advantage.

I am,

Chelsea, March
18, 1755.

S I R,

Your most obedient

humble servant,

Philip Miller.